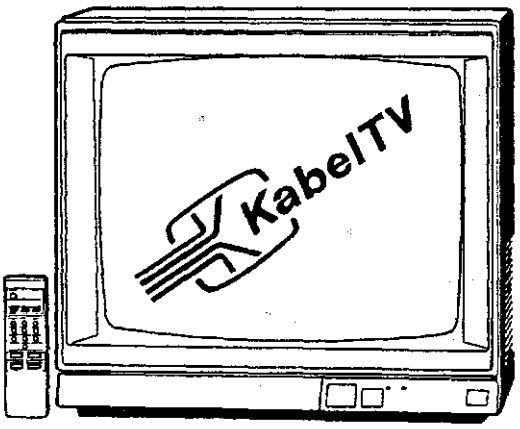
Service Manual

ORION

Color 423 / 513 PAL



Anderungen vorbehalten!

Printed in Germany

Chassis Code:

E

Besteli-Nr.:

4013

SPECIFICATIONS

PICTURE SIZE	20 inch
SYSTEM	PAL
FREQUENCY RANGE: VHF(L)	2 - 4, X - S2 ch
VHF(H)	S3 - S10, 5 - 12, S11 - S20 ch
UHF	21 - 69 ch
MAXIMUM SENSITIVITY: VHF	20 dB
UHF	25 dB
INTERMEDIATE FREQUENCY:	
Picture IF Carrier Frequency	38.9 MHz
Color Sub Carrier Frequency	34.47 MHz
Sound IF Carrier Frequency	33.4 MHz
SOUND INTERMEDIATE FREQUENCY	5.5 MHz
MAXIMUM OUTPUT POWER	2.0 W
10% THD OUTPUT POWER	1.8 W
SPEAKER	8 ohm
POWER SOURCE	AC 220V

IMPORTANT

*USE AN ISOLATION TRANSFORMER WHEN PERFORMING ANY SERVICE ON THIS CHASSIS.

*WHEN REMOVING A PCB OR RELATED COMPONENT, AFTER UNFASTENING OR CHANGING WIRE, BE SURE TO PUT WIRE BACK IN ITS ORIGINAL POSITION.

*INFERIOR SILICON GREASE CAN DAMAGE IC's AND TRANSISTORS.
WHEN REPLACING AN IC's OR TRANSISTORS, USE ONLY SPECIFIED SILICON GREASE (YG6260M).
REMOVE ALL OLD SILICON BEFORE APPLYING NEW SILICON.

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ELECTRICAL ADJUSTMENTS

1. BEFORE ELECTRICAL ADJUSTMENT

These are adjustments when you replace electric parts or PCB ass'y.
When you repair the electric circuit, please read these adjustments.

1-1: Prepare the following measurement tools for the electrical adjustment.

1. Oscilloscope (2 Channel Type)
2. Digital Voltmeter
3. Color Bar Generator
4. Sweepmarker Generator
5. VIF Unit

2. BASIC ADJUSTMENT

2-1: VIF AND AFT

NOTE
Connect input and output terminal of the sweepmarker generator to circuit as shown in **Fig. 2-1-a**, then adjust it.

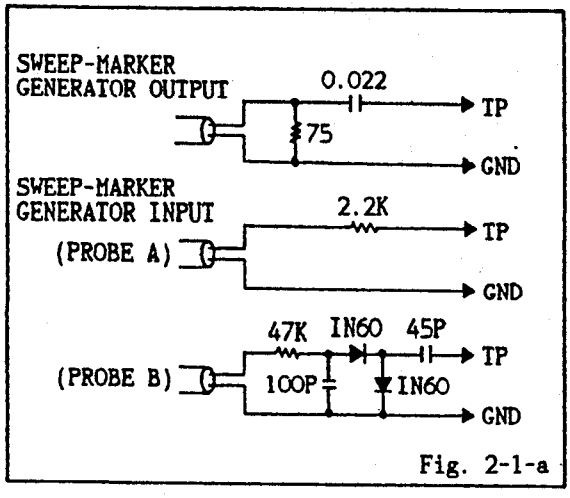
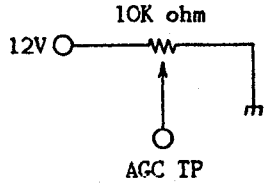


Fig. 2-1-a

1. Connect output terminal of the sweepmarker generator to TP001.
2. Connect input terminal of the sweepmarker generator to TP007.(PROBE A)
3. Connect the volume 10K ohm to IF AGC terminal (TP004), 12V line and ground, then adjust to make the waveform of the oscilloscope be easy to watch.



4. Adjust **L204** until the waveform marker (38.9MHz) will become as shown in **Fig. 2-1-b.**

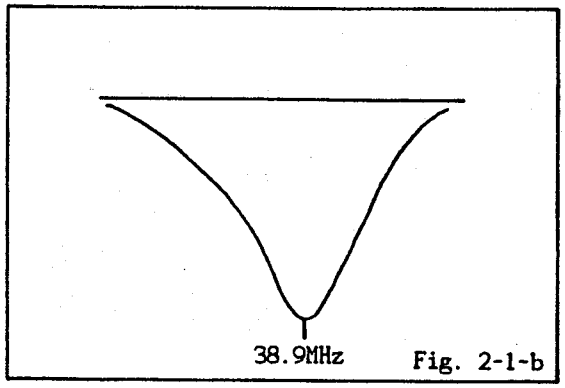


Fig. 2-1-b

5. Disconnect output terminal of the sweepmarker generator from TP001, then connect it to IP of the Tuner Pack.(Connect the 2.7K ohm resistor between them.)
6. Disconnect input terminal of the sweepmarker generator from TP007, then connect it to TP012.(PROBE B)
7. Adjust **L207** until the waveform markers (32.4MHz) will become as shown in **Fig. 2-1-c.**

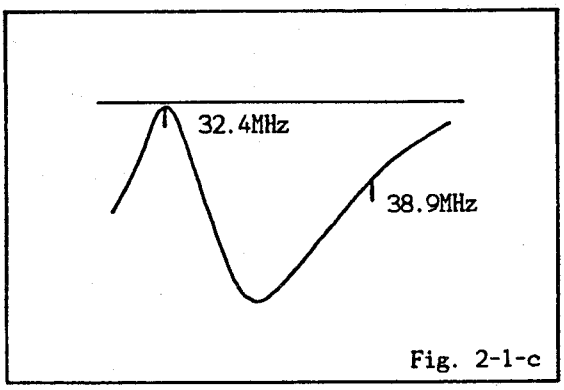


Fig. 2-1-c

8. Disconnect input terminal of the sweepmarker generator from TP012, then connect it to TP007.(PROBE A)
9. Connect the resistor 100 ohm between TP009 and TP010.
10. Adjust **L206** until the waveform will become as shown in **Fig. 2-1-d.**

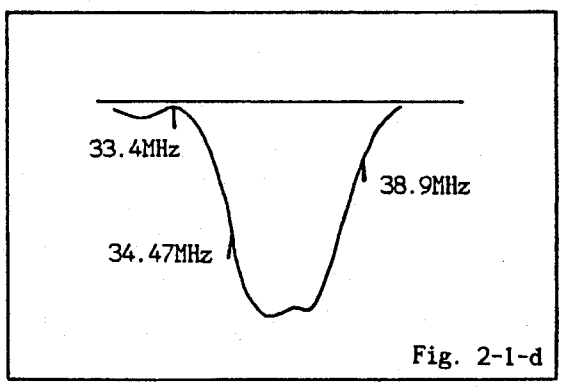


Fig. 2-1-d

11. Disconnect the volume 10K ohm and resistor 100 ohm.
12. Input a 38.9MHz signal to TP of the tuner pack.
13. Connect the digital voltmeter to TP006.
14. Adjust **L203** until the AFT ON mode voltage is as same as the AFT OFF mode voltage.

ELECTRICAL ADJUSTMENTS

2-2: RF AGC

NOTE
Adjust after performing adjustments in section 2-1.

2-2-A: Weak electric field case.

1. Receive the noisy channel.
2. Adjust **VR201** until noise will be weak.
3. Change the channel, confirm other channels are normal.

2-2-B: Strong electric field case.
(When diagonal streaks, radio frequency interference appear.)

1. Adjust **VR201** until diagonal streaks will be weak.
2. When it is not good condition after adjusting VR201, install the attenuator to the antenna terminals, then adjust step (1) again.
3. Confirm noise will appear.
4. Change the channel, confirm other channels are normal.

2-3: CUT OFF

1. Receive the Color Bar Pattern.
2. Set the Bright and Contrast controls to minimum position
3. Connect the oscilloscope to collector of Q804.
4. Adjust the Screen control until voltage will be DC150V. **(Refer to Fig. 2-2)**

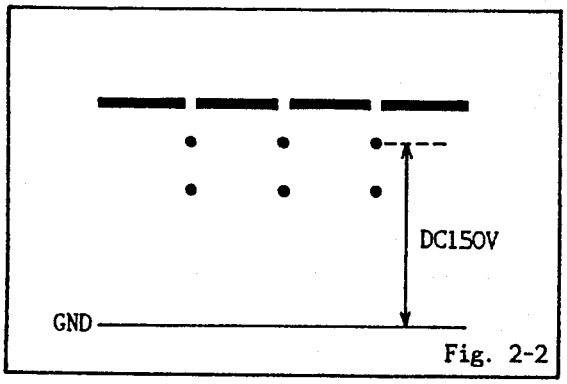


Fig. 2-2

2-4: FOCUS

1. Receive the broadcasting signal.
2. Adjust the focus control until picture will be distinct.

2-5: VERTICAL SIZE

1. Receive the crosshatch pattern from the color bar generator.
2. Adjust the bright and contrast controls until the crosshatch pattern is distinct.
3. Adjust **VR401** until the center of crosshatch is square.
4. Receive broadcasting signal, then confirm picture is normal.

2-6: HUE DELAY

1. Receive the DEM Pattern.
2. Connect the dual oscilloscope to TP601 and TP602.
3. Adjust **L603** and **VR601** until the waveform will be straight line. **(Refer to Fig. 2-3)**

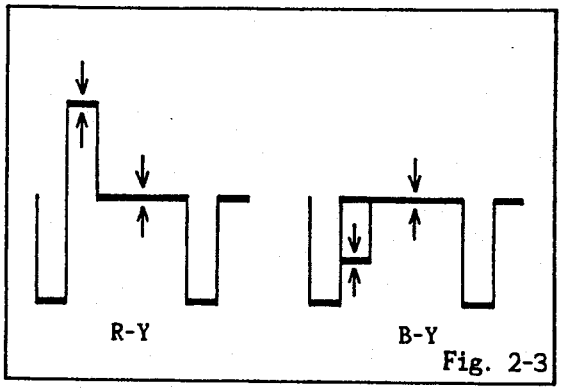


Fig. 2-3

2-7: HORIZONTAL POSITION

1. Receive the color bar pattern.
2. Adjust **VR402** until the color width of both of screen edges will be equal.
3. Receive broadcasting signal, then confirm picture is normal.

2-8: SUB BRIGHT

1. Receive the monochrome pattern.
2. Set the bright control to minimum position.
3. Set the contrast control to maximum position.
4. Adjust **VR102** until 50% of gray scale will begin to light.

2-9: VERTICAL POSITION

1. Receive the color bar pattern.
2. Adjust **VR403** until horizontal line of the color bar will come to around center of the CRT.

2-10: HORIZONTAL SIZE

1. Receive the crosshatch pattern from the color bar generator.
2. Adjust the bright and contrast controls until the crosshatch pattern is distinct.
3. Adjust **VR501** until the center of crosshatch is square.
4. Receive broadcasting signal, then confirm picture is normal.

ELECTRICAL ADJUSTMENTS

3. PURITY AND CONVERGENCE ADJUSTMENT

NOTE
1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Power ON the unit and demagnetize with a Degauss Coil.

3-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 3-1)**
   If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

3-2: PURITY

NOTE
Adjust after performing adjustments in section 3-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
   Adjust the pair of purity magnets so the color at ends are equally wide.
3. Move the deflection yoke backward (To neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue colors.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

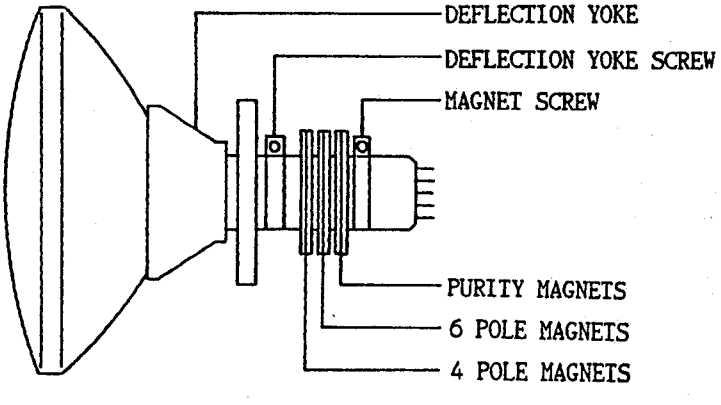


Fig. 3-1

3-3: STATIC CONVERGENCE

NOTE
Adjust after performing adjustments in section 3-2.

1. Receive the crosshatch pattern from color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

3-4: DYNAMIC CONVERGENCE

NOTE
Adjust after performing adjustments in section 3-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 3-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 3-2-b)**

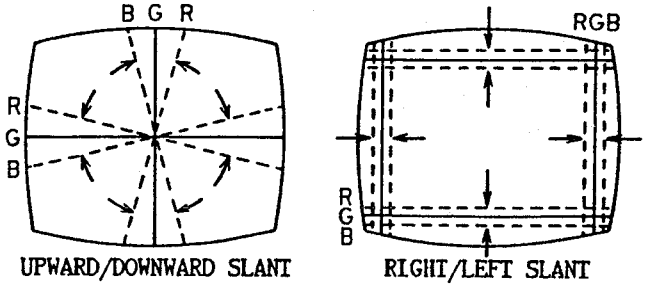
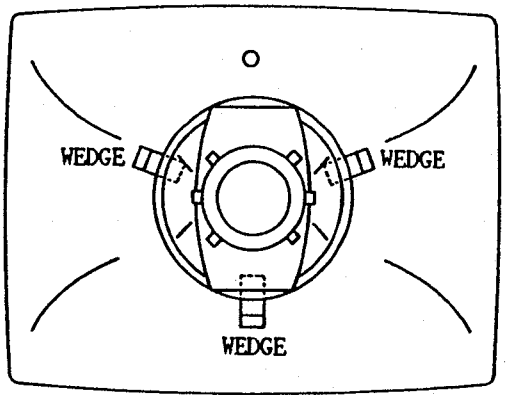


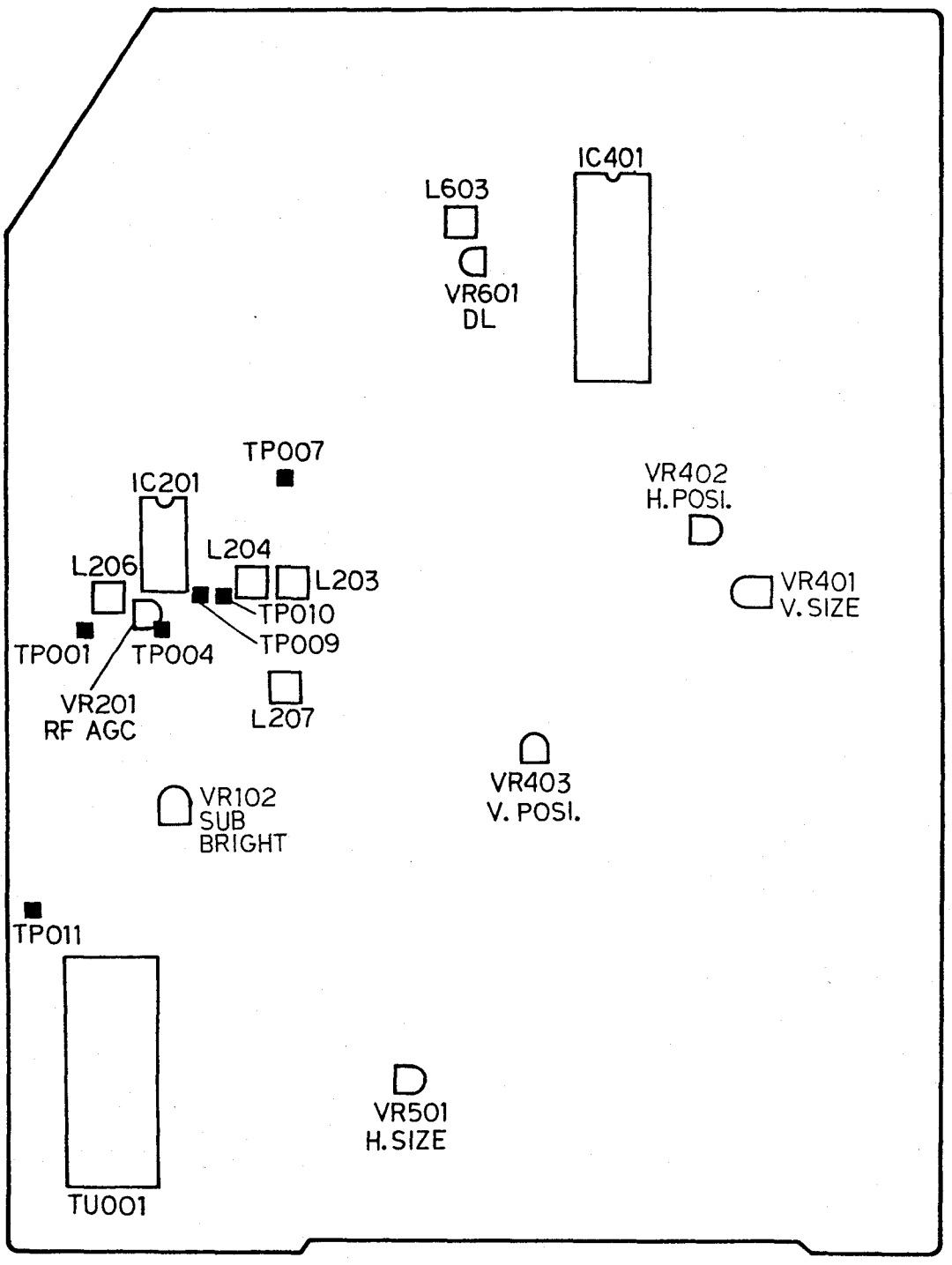
Fig. 3-2-a



WEDGE POSITION

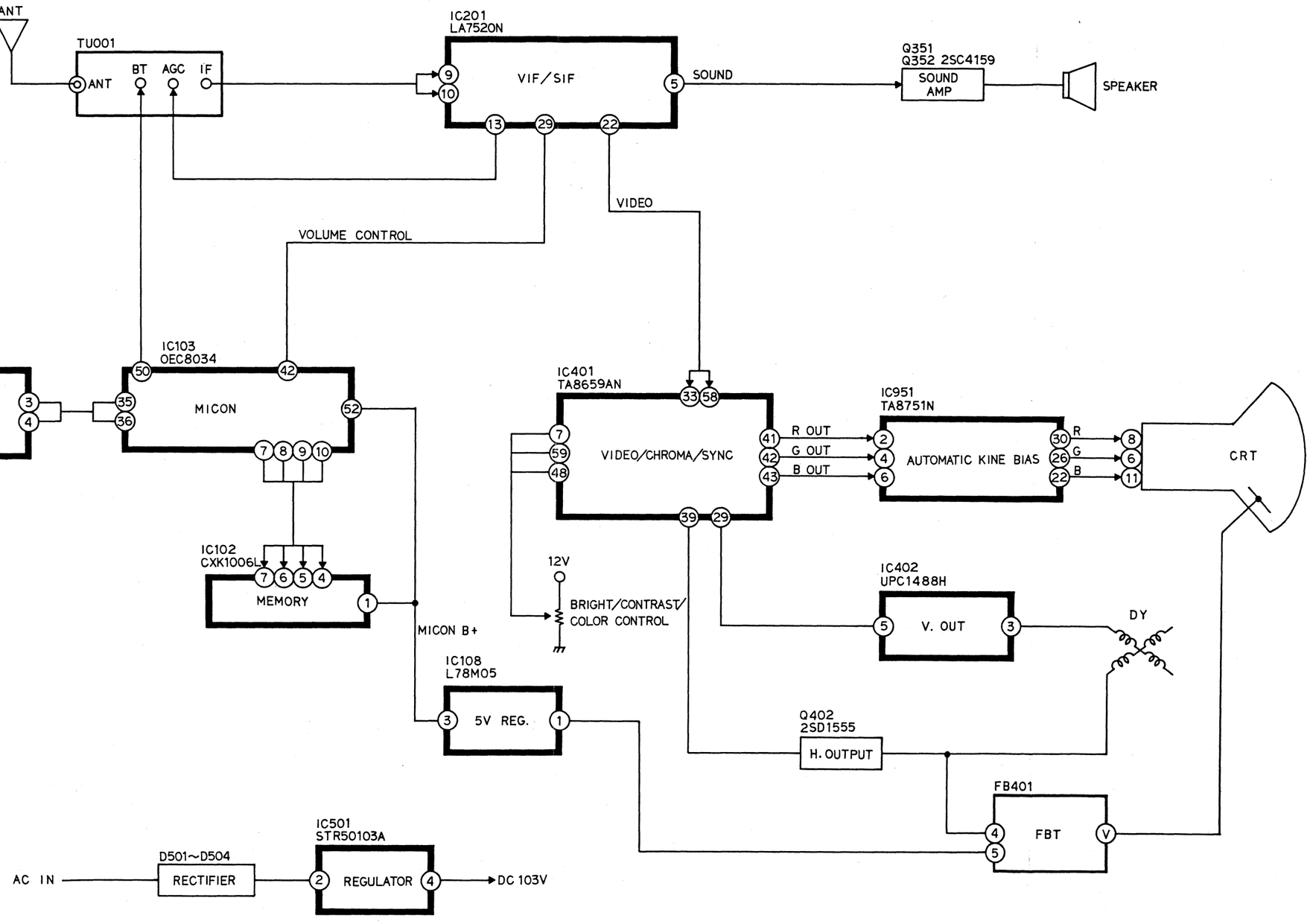
Fig. 3-2-b

MAJOR COMPONENTS LOCATION GUIDE



MAIN

BLOCK DIAGRAM

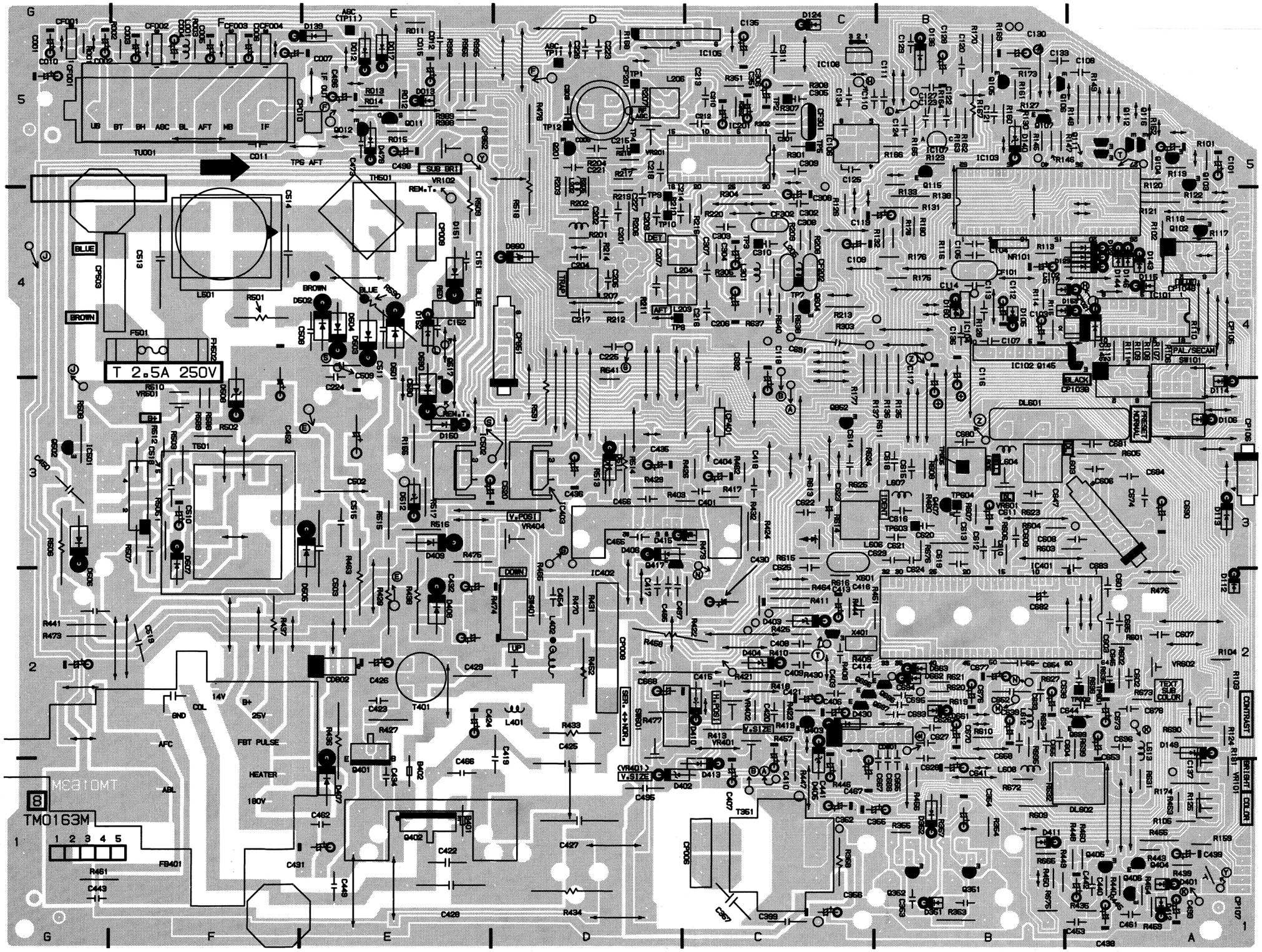


BLOCK DIAGRAM

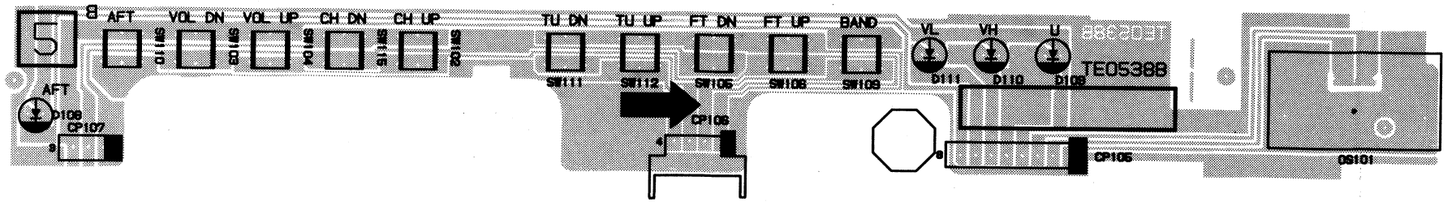
2-3756

PRINTED CIRCUIT BOARD

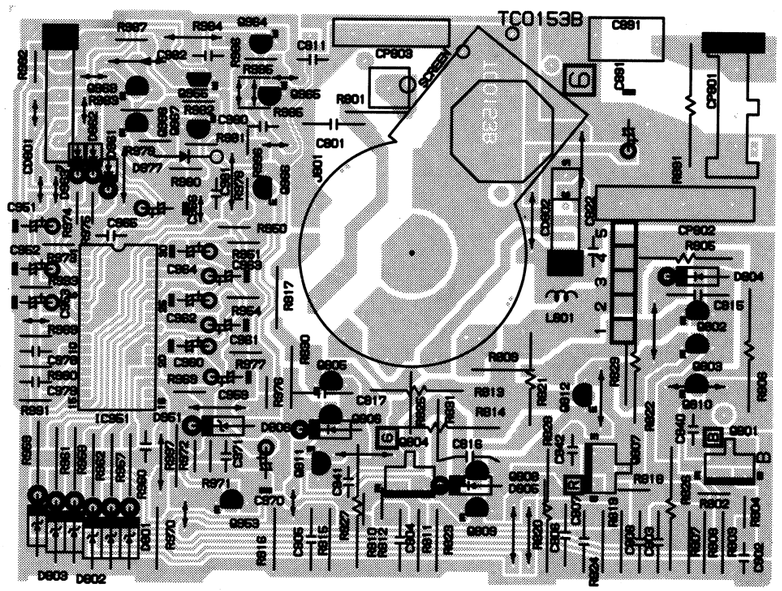
MAIN



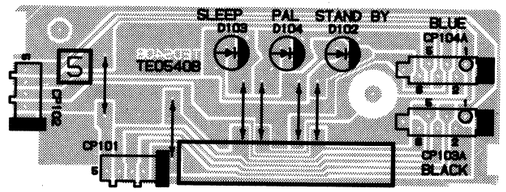
CONTROL



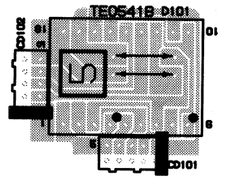
CRT/AKB



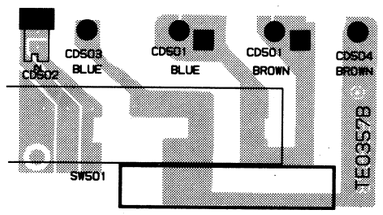
LED



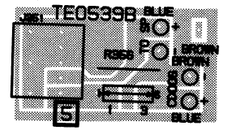
SEGMENT LED



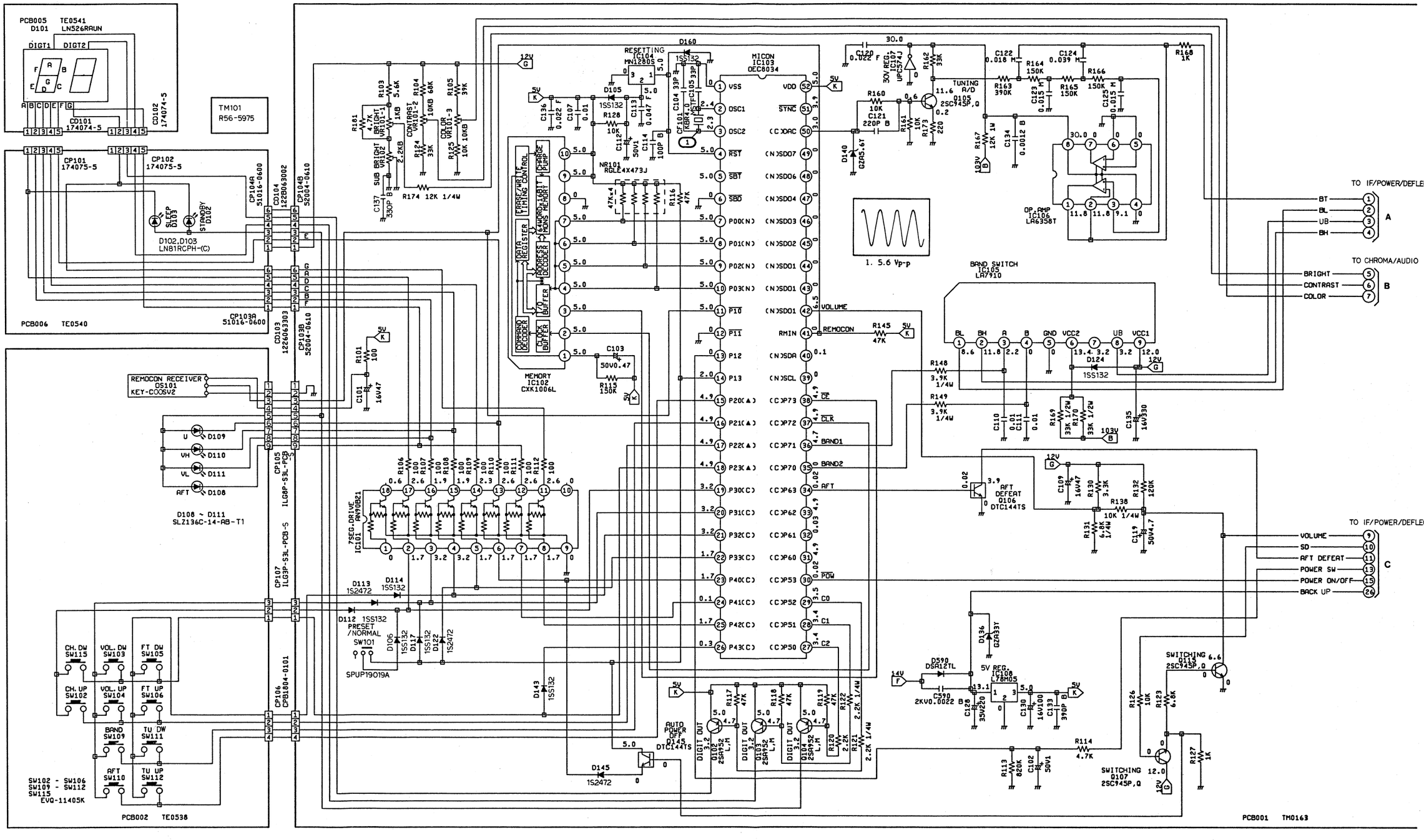
POWER SWITCH



EARPHONE JACK

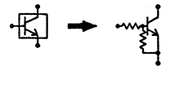


MICON SCHEMATIC DIAGRAM



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: DIGITAL TRANSISTOR



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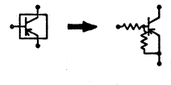
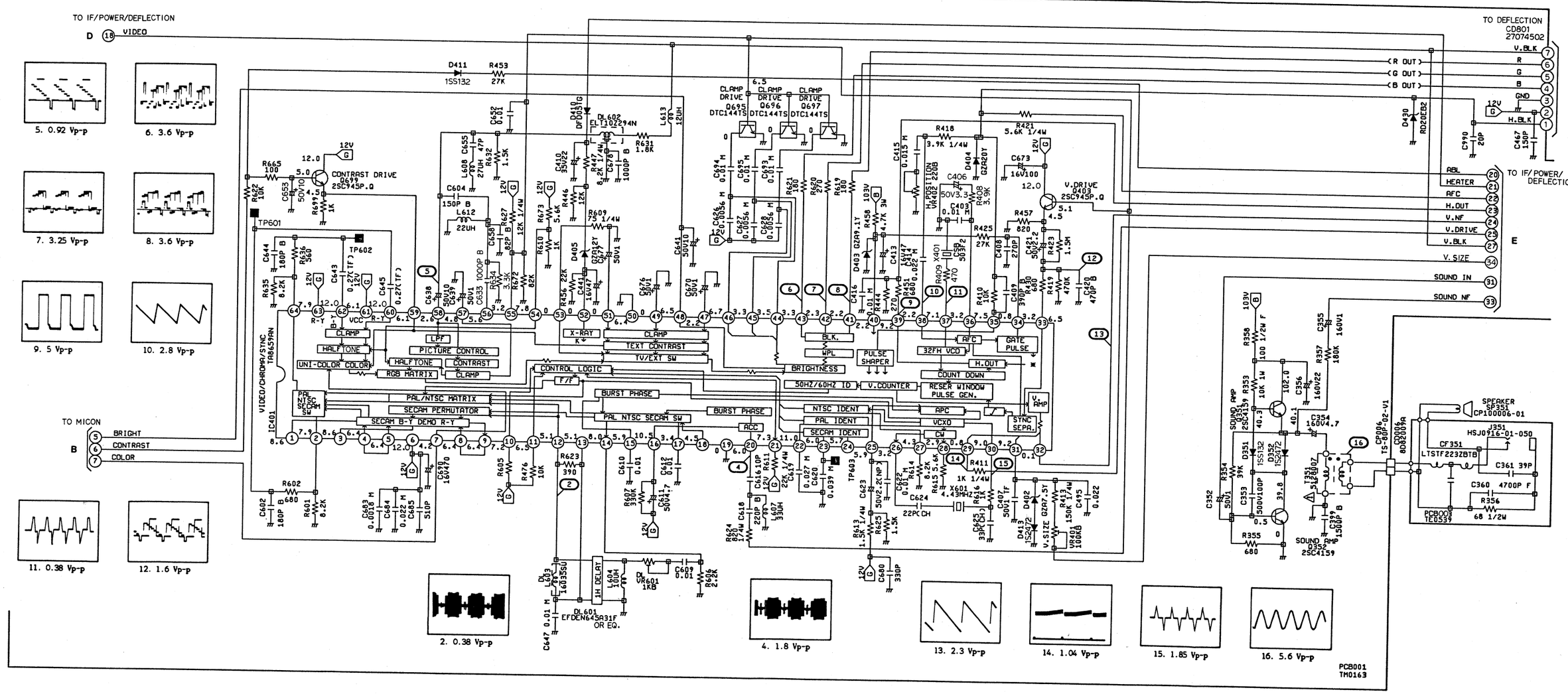


MICON SCHEMATIC DIAGRAM

1-11628

CHROMA/AUDIO SCHEMATIC DIAGRAM



CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED ON PARTS LIST ONLY.

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

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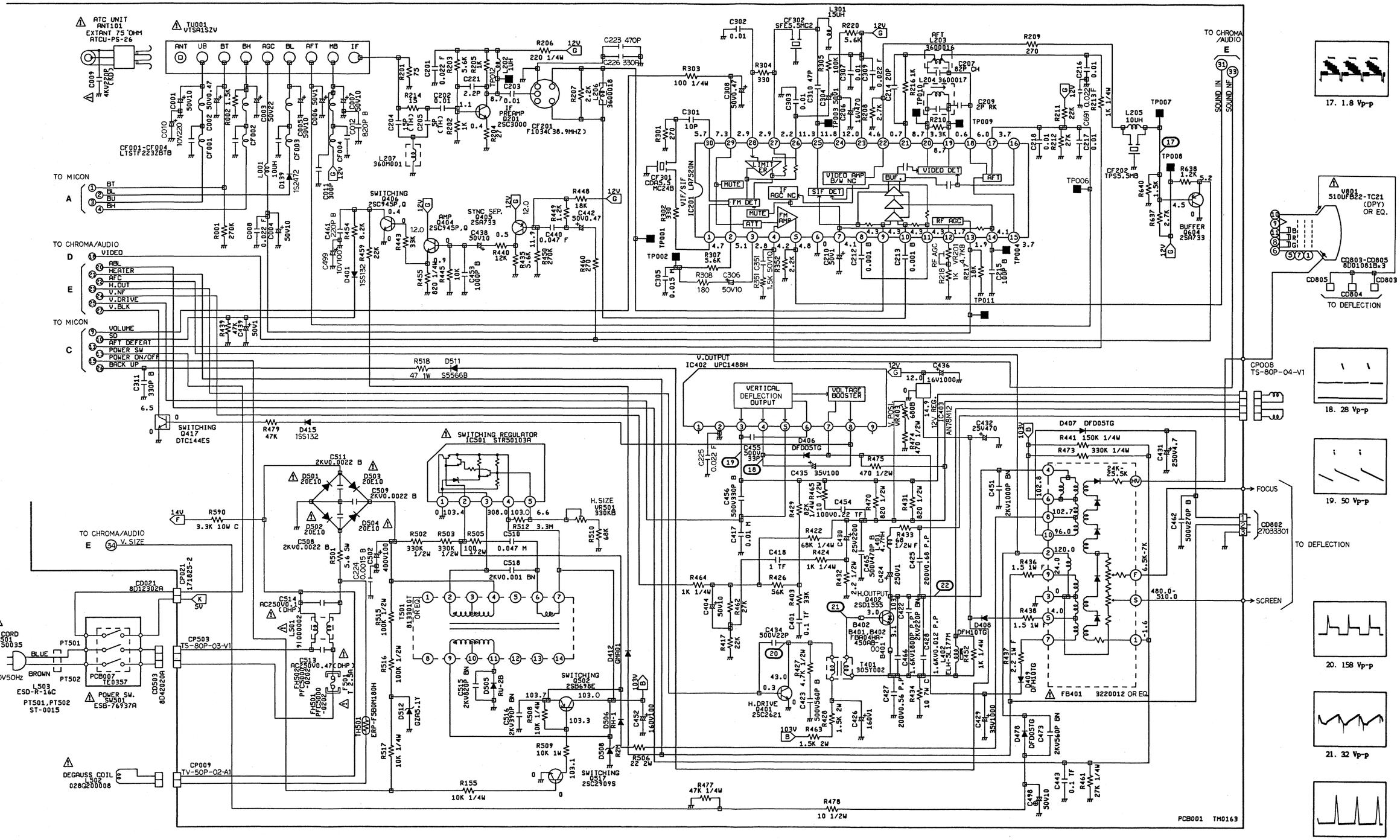
CHROMA/AUDIO SCHEMATIC DIAGRAM

1-11629

IF/POWER/DEFLECTION SCHEMATIC DIAGRAM



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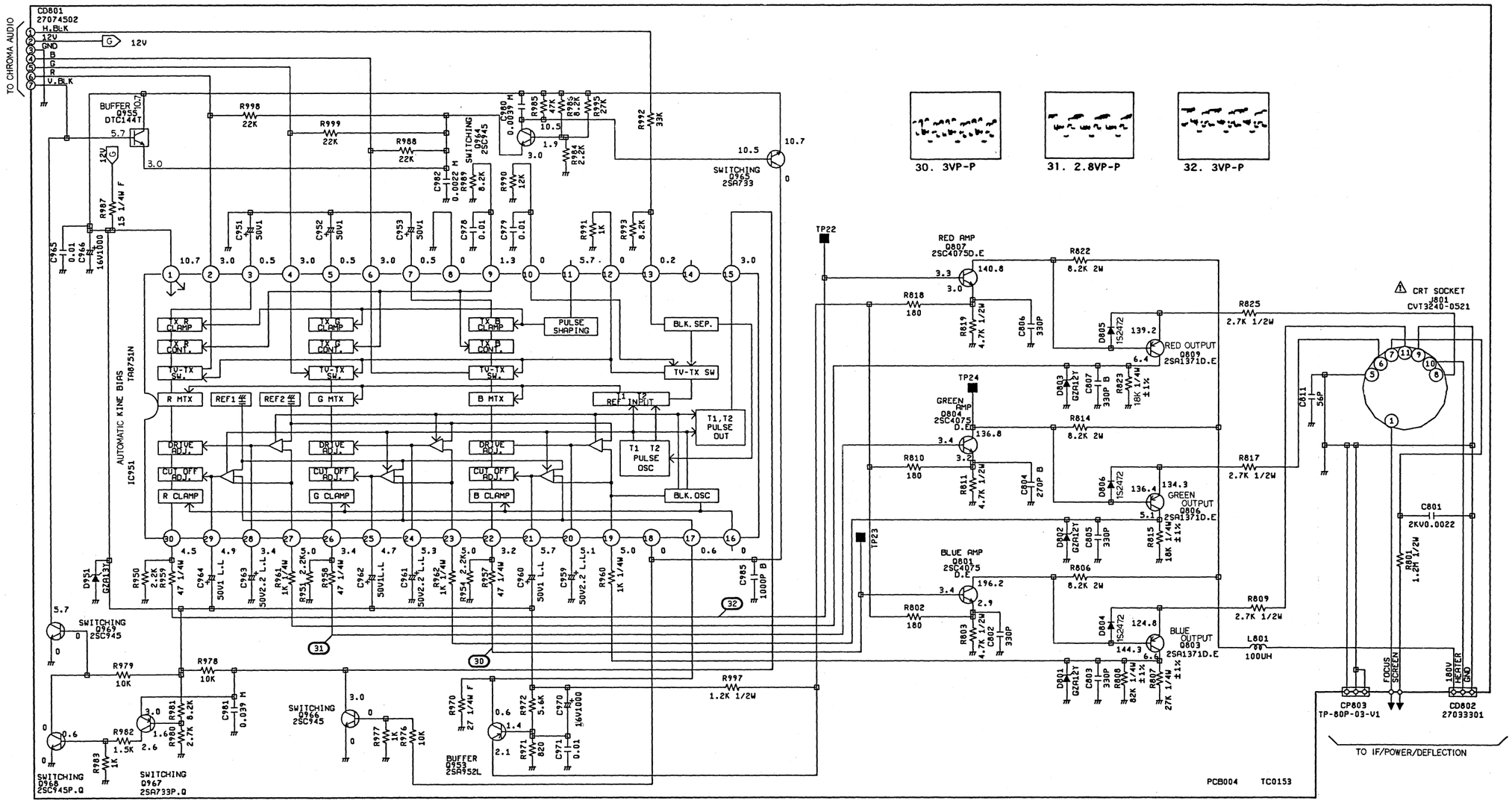
IF/POWER/DEFLECTION SCHEMATIC DIAGRAM

1-11630

DEFLECTION SCHEMATIC DIAGRAM



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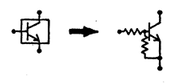
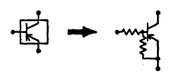


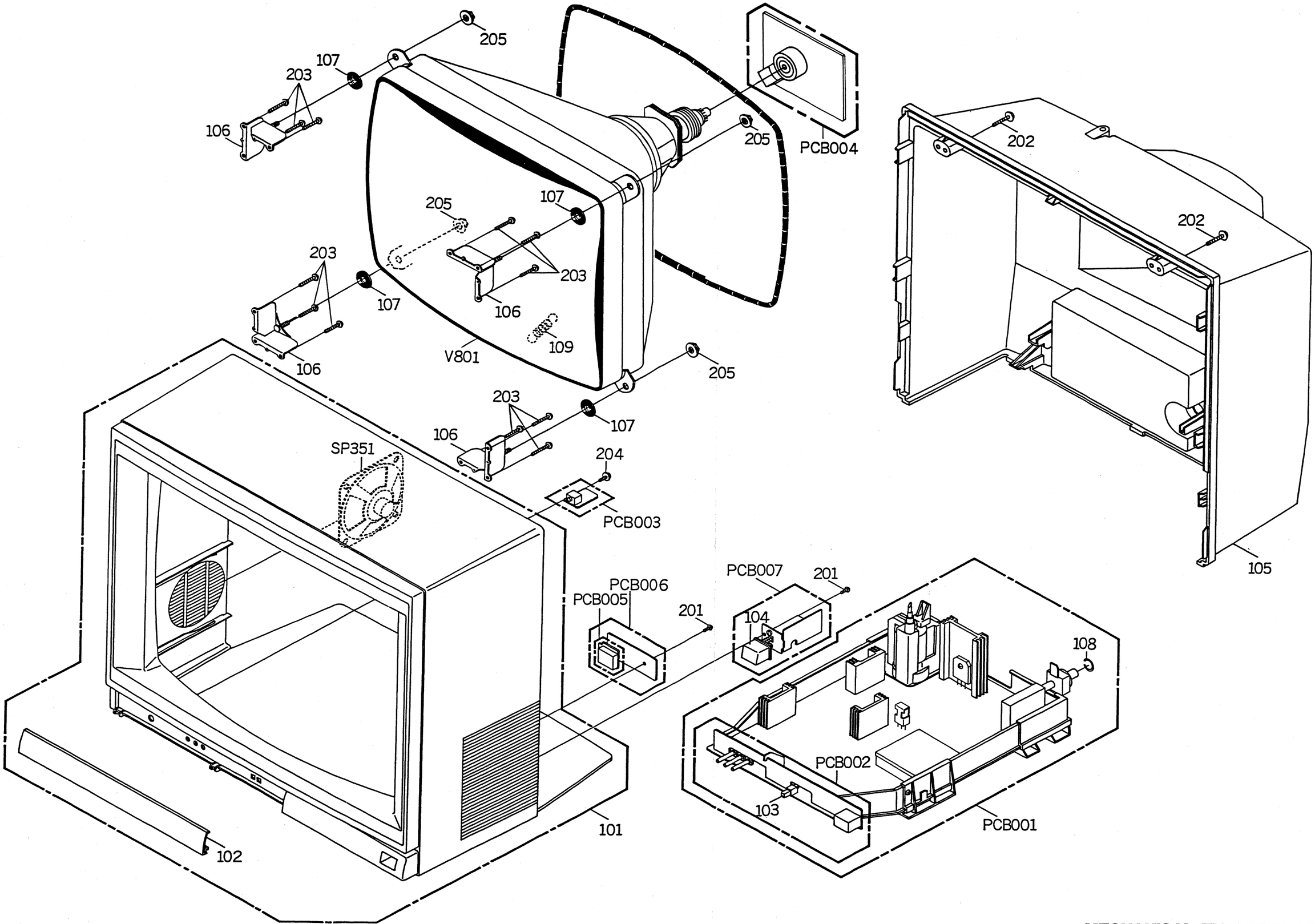
CAUTION: DIGITAL TRANSISTOR



DEFLECTION SCHEMATIC DIAGRAM

1-11631

MECHANICAL EXPLODED VIEW



MECHANICAL EXPLODED VIEW
1-11632

MECHANICAL REPLACEMENT PARTS LIST

REF.NO	PART NO	DESCRIPTION	
101	A36954B720	CABINET,FRONT ASS'Y	
	701WPB0009	CABINET,FRONT	
	711TPD0076	PLATE,FRONT	
	7220000893	SHEET,PTB	
	7230001825	PLATE,COLOR	
	7230004475	SHEET,LED	
	7230004511	SHEET,OPERATION	
	7232020360	PLATE,BRAND	
	7240000927	SHEET,WARNING	
	735TPA0111	BUTTON,PUSH	
102	712TPD0008	DOOR	
103	735TPA0085	BUTTON,PUSH	
104	735TPA0112	BUTTON,POWER	
105	702WPA0050	CABINET,BACK	
	7222021442	SHEET,RATING	
106	762WSA0011	ANGLE,CRT	
107	800SR00002	SHEET,CRT SUPPORT	
108	749KUA0002	SPRING,ANTENA	
109	741SUA0001	SPRING,EARTH	
201	8110630804	SCREW,TAP TITE(P) BRAZIER	3*8
202	8117540A64	SCREW,TAPPING(BO) TRUSS	4*16
203	8110240804	SCREW,TAP TITE(P) BIND	4*20
204	8117E30A04	SCREW,TAPPING(BO) WH10	3*10
205	8300560004	SL NUT	M6
---	J1080102	GUARANTEE CARD	
---	J3691601	INSTRUCTION BOOK	
---	J3695403	SCHEMATIC DIAGRAM	
---	791SHA0031	LAMIFILM,BAG	
---	792WHA0044	PACKAGE,TOP	
---	792WHA0045	PACKAGE,BOTTOM	
---	793WCD0307	GIFT BOX	

THIS ELECTRICAL PARTS LIST IS STANDARD PART LIST. BUT
INTERCHANGEABLE PARTS MAY BE USED IN THE UNIT.
SEE THE INTERCHANGEABLE PARTS LIST AFTER THE STANDARD PARTS LIST.

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO	PART NO	DESCRIPTION
	RESISTORS	
R167	R3K181123J	R.METAL 12K OHM 1W
R353	R3K181103J	R.METAL 10K OHM 1W
R358	R61582101J	R.FUSE 100 OHM 1/2W
R428	R3K18A152J	R.METAL 1.5K OHM 2W
R433	R61582680J	R.FUSE 68 OHM 1/2W
R434	R5W2CE100J	R.CEMENT 10 OHM 7W
R436	R614811R5J	R.FUSE 1.5 OHM 1W
R437	R615812R2J	R.FUSE 2.2 OHM 1W
R438	R614811R5J	R.FUSE 1.5 OHM 1W
R458	R3K28B472J	R.METAL OXIDE 4.7K OHM 3W
R463	R3K18A152J	R.METAL 1.5K OHM 2W
R501	R5W2CD5R6K	R.CEMENT 5.6 OHM 5W
R506	R3K18A220J	R.METAL 22 OHM 2W
R509	R3K181103J	R.METAL 10K OHM 1W
R518	R3K181470J	R.METAL 47 OHM 1W
R590	R5W2CF332J	R.CEMENT 3.3K OHM 10W
R806	R3K18A822J	R.METAL 8.2K OHM 2W
R814	R3K18A822J	R.METAL 8.2K OHM 2W
R822	R3K18A822J	R.METAL 8.2K OHM 2W
R970	R63584270J	R.FUSE 27 OHM 1/4W
R985	R00106473J	RC 47K OHM 1/6W
R987	R63584150J	R.FUSE 15 OHM 1/4W
R995	R00106273J	RC 27K OHM 1/6W
C009	C030309H2K	CC 220 PF 4KV B
C137	C0J0B04L2K	CC 330 PF 50V YB
C360	C0J0F04Q4Z	CC 0.047 UF 50V YF
C361	C0J0SL4N1K	CC 39 PF 50V SL
C422	C050BN7H2K	CC 220 PF 2KV BN
C425	P441F2684J	CMPP 0.68 UF 200V
C427	P441F2564J	CMPP 0.56 UF 200V
C428	P442F9123J	CMPP 0.012 UF 1600V
C429	E0E7F4102M	CE 1000 UF 35V
C430	E0E7F3222M	CE 2200 UF 25V
C451	C050BN713K	CC 1000 PF 2KV BN
C452	E0E7FB101M	CE 100 UF 160V
C466	P442F9182J	CMPP 0.0018UF 1600V
C473	C050BN7S2K	CC 560 PF 2KV BN
C502	E0260H101T	CE 100 UF 400V
C508	C0JBB07H3K	CC 0.0022UF 2KV YB
C509	C0JBB07H3K	CC 0.0022UF 2KV YB
C511	C0JBB07H3K	CC 0.0022UF 2KV YB
⚠ C513	P4440B474M	CMPP 0.47 UF 250V
⚠ C514	P4440B104M	CMPP 0.1 UF 250V
C515	C050BN7W2K	CC 820 PF 2KV BN
C516	C050BN7N2K	CC 390 PF 2KV BN
C518	C050BN713K	CC 1000 PF 2KV BN
C590	C0JBB07H3K	CC 0.0022UF 2KV YB
C691	C0J0F04H4Z	CC 0.022 UF 50V YF
C801	C0JBB07H3K	CC 0.0022UF 2KV YB
C990	C0J0SL421J	CC 20 PF 50V SL
	SEMICONDUCTORS	
D101	0040122003	LED DISPLAY IC LN526RAUN
D102	0021121050	LED LN81RCPH-(C)
D103	0021121050	LED LN81RCPH-(C)
D105	D1VT001320	DIODE,SILICON 1SS132T-77
D106	D1VT001320	DIODE,SILICON 1SS132T-77
D108	002132Q030	LED SLZ136C-14-AB-T1
D109	002132Q030	LED SLZ136C-14-AB-T1
D110	002132Q030	LED SLZ136C-14-AB-T1
D111	002132Q030	LED SLZ136C-14-AB-T1
D112	D1VT001320	DIODE,SILICON 1SS132T-77
D113	D1VT024720	DIODE,SILICON 1S2472T-77
D114	D1VT001320	DIODE,SILICON 1SS132T-77
D117	D1VT001320	DIODE,SILICON 1SS132T-77
D122	D1VT024720	DIODE,SILICON 1S2472T-77
D124	D1VT001320	DIODE,SILICON 1SS132T-77
D136	D93T03300Y	DIODE,ZENER GZA33 Y BT
D139	D1VT024720	DIODE,SILICON 1S2472T-77
D140	D93T05R60Y	DIODE,ZENER GZA5.6 Y BT
D143	D1VT001320	DIODE,SILICON 1SS132T-77
D145	D1VT024720	DIODE,SILICON 1S2472T-77
D160	D1VT001320	DIODE,SILICON 1SS132T-77
D351	D1VT001320	DIODE,SILICON 1SS132T-77
D352	D1VT024720	DIODE,SILICON 1S2472T-77
D401	D1VT001320	DIODE,SILICON 1SS132T-77
D402	D93T07R50Y	DIODE,ZENER GZA7.5 Y BT
D403	D93T09R10Y	DIODE,ZENER GZA9.1 Y BT
D404	D93T02000Y	DIODE,ZENER GZA20 Y BT
D405	D93T01200Y	DIODE,ZENER GZA12 Y BT

REF.NO	PART NO	DESCRIPTION
	SEMICONDUCTORS (CONT)	
D406	D23TFD05TG	DIODE,RECTIFIER DFD05TG-BT
D407	D23TFD05TG	DIODE,RECTIFIER DFD05TG-BT
D408	D23TFH10TG	DIODE,RECTIFIER DFH10TG-AT1
D409	D23TFH10TG	DIODE,RECTIFIER DFH10TG-AT1
D410	D23TFD05TG	DIODE,RECTIFIER DFD05TG-BT
D411	D1VT001320	DIODE,SILICON 1SS132T-77
D412	D1VT001320	DIODE,SILICON 1SS132T-77
D413	D1VT024720	DIODE,SILICON 1S2472T-77
D415	D1VT001320	DIODE,SILICON 1SS132T-77
D430	D92T0200B2	DIODE,ZENER RD20EB 2 TA11R
D478	D23TFD05TG	DIODE,RECTIFIER DFD05TG-BT
⚠ D501	D28020E100	DIODE,SILICON 20E10
⚠ D502	D28020E100	DIODE,SILICON 20E10
⚠ D503	D28020E100	DIODE,SILICON 20E10
⚠ D504	D28020E100	DIODE,SILICON 20E10
D505	D2B00RU2B0	DIODE,SILICON RU-2B
D506	D2BF00RH10	DIODE,RECTIFIER RH-1
D508	D2B000R2M0	DIODE,AVALANCHE R2M
D511	D25T5566B0	DIODE,RECTIFIER S5566B(TPA3)
D512	D93T05R10Y	DIODE,ZENER GZA5.1 Y BT-T
D590	D23TDSA12T	DIODE,RECTIFIER DSA12TL-AT1
D801	D93T01200Y	DIODE,ZENER GZA12 Y BT
D802	D93T01200Y	DIODE,ZENER GZA12 Y BT
D803	D93T01200Y	DIODE,ZENER GZA12 Y BT
D804	D1VT024720	DIODE,SILICON 1S2472T-77
D805	D1VT024720	DIODE,SILICON 1S2472T-77
D806	D1VT024720	DIODE,SILICON 1S2472T-77
D951	D93T01300Y	DIODE,ZENER GZA13 Y BT
IC101	I01D10B210	IC AN90B21
IC102	I30S1006L0	IC CXK1006L
IC103	I51D080340	IC OEC8034
IC104	I01901280S	IC MN1280-S
IC105	I03S079100	IC LA7910
IC106	I03D06358T	IC LA6358T
IC107	I02190574J	IC UPC574J-T
IC108	I03A98M050	IC L78M05
IC201	I03DE7520N	IC LA7520N
IC401	I05DE86590	IC TA8659AN
IC402	I02SD14880	IC UPC1488H
IC403	I01A98M120	IC AN78M12
⚠ IC501	I2B490103A	IC STR50103A
IC951	I05DE87510	IC TA8751N
Q102	TALT009520	TRANSISTOR,SILICON 2SA952(C)-T
Q103	TALT009520	TRANSISTOR,SILICON 2SA952(C)-T
Q104	TALT009520	TRANSISTOR,SILICON 2SA952(C)-T
Q105	TCLT009450	TRANSISTOR,SILICON 2SC945A(C)-T
Q106	TNYTD03002	COMPOUND TRANSISTOR DTC144TSTP
Q107	TCLT009450	TRANSISTOR,SILICON 2SC945A(C)-T
Q115	TCLT009450	TRANSISTOR,SILICON 2SC945A(C)-T
Q145	TNYTD03002	COMPOUND TRANSISTOR DTC144TSTP
Q201	TC3T030000	TRANSISTOR,SILICON 2SC3000-AA
Q351	TC30041590	TRANSISTOR,SILICON 2SC4159(D,E)
Q352	TC30041590	TRANSISTOR,SILICON 2SC4159(D,E)
Q401	TC3Q02621E	TRANSISTOR,SILICON 2SC2621E-RAC
Q402	TDUF015550	TRANSISTOR,SILICON 2SD1555
Q403	TCLT009450	TRANSISTOR,SILICON 2SC945A(C)-T
Q404	TCLT009450	TRANSISTOR,SILICON 2SC945A(C)-T
Q405	TALT007330	TRANSISTOR,SILICON 2SA733(C)-T
Q406	TCLT009450	TRANSISTOR,SILICON 2SC945A(C)-T
Q417	TNYTD03001	COMPOUND TRANSISTOR DTC144ESTP
Q502	TBWT00698E	TRANSISTOR,SILICON 2SB698E-AA
Q517	TC3T02909S	TRANSISTOR,SILICON 2SC2909S-AA
Q604	TALT007330	TRANSISTOR,SILICON 2SA733(C)-T
Q695	TNYTD03002	COMPOUND TRANSISTOR DTC144TSTP
Q696	TNYTD03002	COMPOUND TRANSISTOR DTC144TSTP
Q697	TNYTD03002	COMPOUND TRANSISTOR DTC144TSTP
Q699	TCLT009450	TRANSISTOR,SILICON 2SC945A(C)-T
Q801	TC3Q040750	TRANSISTOR,SILICON 2SC4075-YAC
Q803	TA3T1371A0	TRANSISTOR,SILICON 2SA1371-AE
Q804	TC3Q040750	TRANSISTOR,SILICON 2SC4075-YAC
Q806	TA3T1371A0	TRANSISTOR,SILICON 2SA1371-AE
Q807	TC3Q040750	TRANSISTOR,SILICON 2SC4075-YAC
Q809	TA3T1371A0	TRANSISTOR,SILICON 2SA1371-AE
Q953	TALT00952L	TRANSISTOR,SILICON 2SA952(C)-T L
Q955	TNYTD03002	COMPOUND TRANSISTOR DTC144TSTP
Q964	TCLT009450	TRANSISTOR,SILICON 2SC945A(C)-T
Q965	TALT007330	TRANSISTOR,SILICON 2SA733(C)-T
Q966	TCLT009450	TRANSISTOR,SILICON 2SC945A(C)-T
Q967	TALT007330	TRANSISTOR,SILICON 2SA733(C)-T
Q968	TCLT009450	TRANSISTOR,SILICON 2SC945A(C)-T
Q969	TCLT009450	TRANSISTOR,SILICON 2SC945A(C)-T

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO	PART NO	DESCRIPTION
COILS & TRANSFORMERS		
L001	021JA6100K	COIL 10 UH
L202	0216731R0K	COIL 1.0 UH
L203	033600016N	COIL,VIDEO IFT 3600016
L204	033600017N	COIL,VIDEO IFT 3600017
L205	021JA6100K	COIL 10 UH
L206	033600018N	COIL,VIDEO IFT 3600018
L207	03360M001N	COIL,TRAP 360M001
L301	021673150K	COIL 15 UH
L401	021679472K	COIL 4.7 MH
L402	022R000012	COIL,LINEARITY ELH-5L177M
⚠ L501	0291000002	COIL,LINE FILTER 91000002
⚠ L502	028Q200008	COIL,DEGAUSS 8Q200008
L503	02AXA509C1	FILTER,LINE ESD-R-16C
L603	03352R007G	COIL,CHROMA 16035SU
L604	021JA6100K	COIL 10 UH
L607	021JA6330K	COIL 33 UH
L608	021JA6270K	COIL 27 UH
L612	021JA6220K	COIL 22 UH
L613	021JA6120K	COIL 12 UH
L801	021673101K	COIL 100 UH
⚠ T351	045128007U	TRANS.,SOUND OUTPUT 5128007
T401	03305Y002G	TRANS.,HORIZONTAL DRIVE 305Y002
T501	048133010T	TRANSFORMER,SWITCHING 8133010T
JACKS		
J351	0602161001	JACK,RCA 3.5 HSJ0916-01-050
⚠ J801	0666130009	SOCKET,CRT CVT3240-0521
SWITCHES		
SW101	0500201019	SWITCH,PUSH SPUP19019A
SW102	0504101T20	SWITCH,TACT EVQ-11405K
SW103	0504101T20	SWITCH,TACT EVQ-11405K
SW104	0504101T20	SWITCH,TACT EVQ-11405K
SW105	0504101T20	SWITCH,TACT EVQ-11405K
SW106	0504101T20	SWITCH,TACT EVQ-11405K
SW109	0504101T20	SWITCH,TACT EVQ-11405K
SW110	0504101T20	SWITCH,TACT EVQ-11405K
SW111	0504101T20	SWITCH,TACT EVQ-11405K
SW112	0504101T20	SWITCH,TACT EVQ-11405K
SW115	0504101T20	SWITCH,TACT EVQ-11405K
⚠ SW501	0530102008	SWITCH,PUSH ESB-76937A
VARIABLE RESISTORS		
VR101	V029300012	VR,ROTARY RK09Z331001EA
VR102	V1163H3BT6	VR,SEMIFIXED EVNDXAA03BE3
VR201	V1163Q3BT6	VR,SEMIFIXED EVNDXAA03BQ3
VR401	V126315B03	VR,SEMIFIXED RH0624C15J0E
VR402	V1163H2BT6	VR,SEMIFIXED EVNDXAA03BE2
VR403	V1263U2B03	VR,SEMIFIXED RH0624CW2J
VR501	V1163L5BT6	VR,SEMIFIXED EVNDXAA03BY5
VR601	V116313BT6	VR,SEMIFIXED EVNDXAA03B13
P.C. BOARD ASSEMBLIES		
PCB001	A36916B01CC	PCB ASS'Y TM0163-C
PCB002	A36916B03A	PCB ASS'Y TE0538
PCB003	A36916B27A	PCB ASS'Y TE0539
PCB004	A36916B11C	PCB ASS'Y TC0153
PCB005	A36916B19A	PCB ASS'Y TE0541
PCB006	A36916B20A	PCB ASS'Y TE0540
PCB007	A36916B34A	PCB ASS'Y TE0357
MISCELLANEOUS		
⚠ ANT101	0637300013	ANT.UNIT ATCU-PS-26
B401	024JT03551	CORE,BEADS FBA04HA450AB-00
B402	024JT03551	CORE,BEADS FBA04HA450AB-00
BT101	141T004005	BATTERY,MANGAN UM-4
BT102	141T004005	BATTERY,MANGAN UM-4
CD006	068D82009A	CORD,CONNECTOR 8D82009A
CD021	068D12302A	CORD,CONNECTOR 8D12302A
CD101	0694250110	CONNECTOR,PCB SIDE 174074-5
CD102	0694250110	CONNECTOR,PCB SIDE 174074-5
CD103	1226063303	CORD,JUMPER 26063303
CD104	122B063002	CORD,JUMPER 2B063002
⚠ CD501	120S450035	CORD,AC 120S450035
CD503	068D42020A	CORD,CONNECTOR 8D42020A
CD801	1227074502	CORD,JUMPER 27074502
CD802	1227033301	CORD,JUMPER 27033301
CD803	068D01081B	CORD,CONNECTOR 8D01081B
CD804	068D01081B	CORD,CONNECTOR 8D01081B
CD805	068D01081B	CORD,CONNECTOR 8D01081B
CF001	116F3TH4Z1	FILTER,EMI LTSTF223ZBTB
CF002	116F3TH4Z1	FILTER,EMI LTSTF223ZBTB

REF.NO	PART NO	DESCRIPTION
MISCELLANEOUS (CONT)		
CF003	116F3TH4Z1	FILTER,EMI LTSTF223ZBTB
CF004	116F3TH4Z1	FILTER,EMI LTSTF223ZBTB
CF101	1003T4R001	CERAMIC OSCILLATOR KBR-4.0MSTF
CF201	1027038R91	FILTER,SAW F1034
CF202	1012105R51	FILTER,CERAMIC TRAP TPS5.5MB
CF301	101225R501	FILTER CERAMIC CDA5.5MC24B
CF302	1012005R52	FILTER,CERAMIC SFE5.5MC2
CF351	116F3TH4Z1	FILTER,EMI LTSTF223ZBTB
CP006	069W320018	CONNECTOR,PCB SIDE TS-80P-02-V1
CP008	069W340018	CONNECTOR,PCB SIDE TS-80P-04-V1
CP009	069W420029	CONNECTOR,PCB SIDE TV-50P-02-A1
CP021	0694120099	CONNECTOR,PCB SIDE 171825-2
CP101	0694250100	CONNECTOR,PCB SIDE 174075-5
CP102	0694250100	CONNECTOR,PCB SIDE 174075-5
CP105	069H180209	CONNECTOR,PCB SIDE ILG8P-S3L-PCB-S
CP106	069Q140179	CONNECTOR,PCB SIDE CPB1804-0101
CP107	069H130209	CONNECTOR,PCB SIDE ILG3P-S3L-PCB-S
CP503	069W330018	CONNECTOR,PCB SIDE TS-80P-03-V1
CP803	069W330018	CONNECTOR,PCB SIDE TS-80P-03-V1
CP103A	069R960029	CONNECTOR,PCB SIDE 51016-0600
CP103B	069R960019	CONNECTOR,PCB SIDE 52004-0610
CP104A	069R960029	CONNECTOR,PCB SIDE 51016-0600
CP104B	069R960019	CONNECTOR,PCB SIDE 52004-0610
DL601	104114R43G	DELAY LINE GLASS EFDEN645A31F
DL602	103S000406	DELAY LINE ELT10Z294N
EAR351	074N130007	EARPHONE SE100-335
⚠ F501	0808T2R502	FUSE T 2.5A
⚠ FB401	0432200121	TRANSFORMER,FLYBACK 3220012
FH501	06760T0001	HOLDER,FUSE PFC5000-0202
FH502	06760T0001	HOLDER,FUSE PFC5000-0202
MS002	1283200020	SILICON,SHEET 3200020
NR101	1102447302	R,NETWORK RGLE4X473J
OS101	077M006004	REMOTE RECEIVER KEY-C00SV2
PT501	126C000002	TERMINAL,PIN ST-0015
PT502	126C000002	TERMINAL,PIN ST-0015
S001	128F100003	SPACER BUSH-M
SP351	070R143005	SPEAKER CP100006-01
TH501	D810M180H0	DEGAUSS ELEMENT ERP-F5B0M180H
TM101	076M030004	TRANSMITTER R56-5975
⚠ TU001	0145P11004	TUNER,UHF-VHF VTSA1SZV
⚠ V801	098G200438	C.PICTURE TUBE 510UFB22-TC21(DPY)
X401	1002R50301	CERAMIC OSCILLATOR CSB503F2
X601	10064R43B2	CRYSTAL HC-49/U 4.43361875MHZ

RESISTOR
RC.....CARBON RESISTOR

CAPACITORS
CC.....CERAMIC CAPACITOR
CE.....ALUMI ELECTROLYTIC CAPACITOR
CP.....POLYESTER CAPACITOR
CPP.....POLYPROPYLENE CAPACITOR
CPL.....PLASTIC CAPACITOR
CMP.....METAL POLYESTER CAPACITOR
CMPL.....METAL PLASTIC CAPACITOR
CMPP.....METAL POLYPROPYLENE CAPACITOR
CST.....STYROL CAPACITOR

INTERCHANGEABLE PARTS LIST

NOTE:THE FOLLOWING PART(S) MAY BE SUBSTITUTED FOR PARTS INDICATED IN THE BASIC PART(S) LIST (WITH THE SAME REF.NO.). THESE PARTS SHARE THE SAME ELECTRICAL CHARACTERISTICS AND OTHER ELEMENTS FOR COMMON USAGE.
EITHER PART NUMBER MAY BE USED IN THIS UNIT.

REF.NO	DESCRIPTION (PART NO)	DESCRIPTION (PART NO)
DL601	EFDEN645A31F (104114R43G)	ADL-CP145 (104A14R43F)
⚠ FB401	3220012 (0432200121)	3220012 (043220012A)
T501	8133010T (048133010T)	8133010 (048133010W)
⚠ V801	510UFB22-TC21(DPY) (098G200438)	510UFB22-TC21(DPY) (098Q200438)